

Misc. Publication A38.

THE KENT INCORPORATED SOCIETY
FOR PROMOTING EXPERIMENTS IN
HORTICULTURE

ADMINISTRATIVE REPORT

(FORTY- SECOND YEAR)

GENERAL DEVELOPMENT AND ACTIVITIES

EAST MALLING RESEARCH STATION
Near MAIDSTONE
KENT

1st October, 1953, to 30th September, 1954

Published June, 1955.



GOVERNING MEMBERS OF THE SOCIETY

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Professor T. WALLACE, C.B.E., M.C., D.Sc., F.R.I.C., V.M.H., F.R.S., The Research Station, Long Ashton, near Bristol.

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Professor V. H. BLACKMAN, Sc.D., F.R.S., 17 Berkeley Place, Wimbledon, London, S.W.19.

Appointed by the Council of the Royal Society:

Professor E. J. MASKELL, Ph.D., F.R.S., Botanical Department, The University, Edgbaston, Birmingham, 15. (*Retired June, 1954.*)
Professor T. A. BENNET-CLARK, Ph.D., F.R.S., University of London, King's College, Department of Botany, 68 Half Moon Lane, London, S.E.24. (*Appointed June, 1954.*)

Appointed by the Governors of Wye College, Kent:

- B. S. FURNEAUX, Esq., M.Sc., 94 Warwick Park, Tunbridge Wells, Kent.
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- M. B. CRANE, Esq., V.M.H., F.R.S., Firs Farm, Haughley, near Stowmarket, Suffolk.

Appointed by the Council of the Royal Horticultural Society:

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- M. V. COURAGE, Esq., Anchor Brewhouse, Horselydown, London, S.E.1. (*Retired June, 1954.*)
J. E. MARTINEAU, Esq., The Brewery, Chiswell Street, London, E.C.1. (*Appointed June, 1954.*)

Appointed by the Research Fund Committee of the Institute of Brewing:

- G. T. COOK, Esq., Lulworth, Queen's Avenue, Maidstone, Kent. (*Retired June, 1954.*)
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A. NORMAN, Esq., Froize End, Haddenham, near Ely, Cambs. (*Appointed June, 1954.*)

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- W. ALEXANDER, Esq., M.B.E., Home Farm, Eynsford, Kent.
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E. PETER DAY, Esq., Smith's Hill, West Farleigh, Kent. (*Appointed June, 1954.*)
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R. D. WICKHAM, Esq., Gate House Farm, Brenchley, Kent.

Appointed by the Council of the Horticultural Trades' Association:

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Appointed by the East Malling Research Station Association:

W. P. SEABROOK, Esq., St. Barnabas, Frinton-on-Sea, Essex.

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F. R. TUBBS, Esq., M.Sc., Ph.D., A.R.C.S., D.I.C., F.L.S.

Appointed by the Staff Council of East Malling Research Station:

S. C. PEARCE, Esq., Ph.D.

MEMBERS OF THE EXECUTIVE COMMITTEE

(Governing Members elected at the General Meeting, June, 1954)

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F.R.S.

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F.R.S. (Vice-Chairman).

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Professor T. WALLACE, C.B.E., M.C.,
D.Sc., F.R.I.C., V.M.H., F.R.S.

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F. R. TUBBS, Esq., M.Sc., Ph.D., A.R.C.S., D.I.C., F.L.S.

The Representative of the Staff Council:

S. C. PEARCE, Esq., Ph.D.

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South Kensington, S.W.7.

Professor E. J. MASKELL, F.R.S., Botanical Department, The University,
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Lieut.-Colonel Sir ALBERT STERN, K.B.E., C.M.G., M.A., Barham Court,
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Professor R. H. STOUGHTON, D.Sc., V.M.H., Department of Horticulture, The
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Captain R. WELLINGTON, M.C., Colescus, Gorran Haven, St. Austell, Cornwall.

P. WHELDON, Esq., Newton, Sudbury, Suffolk.

STAFF

(1ST OCTOBER, 1954)

Director : F. R. TUBBS,* M.Sc.(Lond.), Ph.D.(Lond.), A.R.C.S., D.I.C., F.L.S.

Assistant to Director : T. N. HOBLYN,* Hort.Dip.(Wye).

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(Cantab.), A.Inst.P.

Miss A. B. BEAKBANE, Ph.D.(Lond.), N.D.H.

N. H. GRUBB, M.S.A.(Cornell). *Part-time.*

R. J. GARNER, M.Sc.(Reading), N.D.H., Dip.Hort.(Reading).

R. L. KNIGHT, O.B.E., D.Sc.(Lond.), A.I.C.T.A., Dip.Agric.
(Wye). (*Appointed May, 1954.*)

D. W. P. GREENHAM, M.A., Ph.D.(Cantab.).

H. M. TYDEMAN, *Plant Breeding.*

Miss E. M. GLENN, B.Sc.(Lond.), *Field Records.*

Miss I. MODLIBOWSKA, Ph.D.(Lond.).

A. P. PRESTON, N.D.H.(Hons.).

Miss B. G. MOSSE, Ph.D.(Lond.), Dip.Hort.(Swanley).

J. E. GOODE, B.Sc.(Birmingham).

R. M. FULFORD, B.Sc.(Birmingham).

Miss E. C. THOMPSON. (*Resigned April, 1954.*)

Miss D. J. WILSON, B.Sc.Hort.(Reading).

G. C. HEAD, B.Sc.(Manc.). (*Appointed November, 1953.*)

Mrs. J. M. ARIEL (*née* PATON), Hort.Dip.(E. of Scotland),
Field Records.

Miss C. P. NICOLL, B.Sc.Hort.(Reading).

C. H. W. SLATER.

Miss E. KEEP, B.Sc.Hort.(Reading).

Miss J. M. HAY, B.Sc.(Sheffield). (*Appointed July, 1954.*)

Assistants (Scientific) :

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Mrs. O. B. WENBOURNE.

Miss F. M. HODGES.

Miss M. M. FULLER.

Miss M. TAPLEY.

Miss J. C. WOOD.

D. G. L. HOOPER.

(*Appointed November, 1953.*)

(*Resigned December, 1953.*)

K. C. HYRYCZ, N.D.H.

Miss J. M. KEMP.

(*Appointed February, 1954.*)

W. J. USBORNE.

J. K. PICKERILL.

(*Resigned April, 1954.*)

(*Appointed September, 1954.*)

Miss H. J. INKPEN.

(*Resigned September, 1954.*)

Statistics:

T. N. HOBLYN.*

S. C. PEARCE, Ph.D.(Lond.). *Deputy Head of Section.*

G. M. JOLLY, B.Sc.(Aberdeen).

G. H. FREEMAN, M.A., Dip.Stat.(Oxon.).

G. E. DAVIES, B.Sc.(Wales), *Biometric Studies.*

(*Resigned September, 1954.*)

D. A. HOLLAND, B.Sc.(Lond.).

Miss M. J. HALL, B.Sc.(Edin.).

Assistants (Scientific) :

Miss L. V. STICKINGS.

Miss J. A. DOLDING.

Miss S. E. SKINNER.

* Recognized Teacher of the University of London.

- Plant Physiology:** F. R. TUBBS.*
M. C. VYVYAN,* M.A.(Cantab.), D.Sc.(Lond.).
H. W. B. BARLOW, B.Sc.(Edin.). *Deputy Head of Section.*
D. H. MAGGS, B.Sc.(Reading).
H. J. LACEY, M.Sc.(Nottingham).
G. F. TROWELL.
- Assistants (Scientific):*
Miss J. G. SMITH.
Miss S. A. FARTHING.
B. E. COATES. (*Resigned June, 1954.*)
Miss F. LAMB. (*Appointed July, 1954.*)
- Members of Staff of the Imperial College of Science and Technology working in collaboration with the Physiology Section:*
B. D. BOLAS,* D.Sc.(Lond.), D.I.C.
E. S. J. HATCHER, Ph.D.(Bristol).
H. C. RUCK, Ph.D.(Lond.).
C. R. HANCOCK, B.Sc.(Bristol).
F. W. M. LLEWELYN, B.Sc.(Lond.), A.R.C.S.
Miss C. C. MACNAMARA.
I. F. BIRD. (*Appointed October, 1953.*)
- Assistants (Scientific):*
W. C. C. HADLOW. (*Resigned February, 1954.*)
D. D. B. SUMMERS. (*Resigned April, 1954.*)
Miss M. E. HOPGOOD. (*Appointed July, 1954.*)
- Biochemistry:** W. A. ROACH,* D.Sc.(Lond.), A.R.C.S., D.I.C., A.R.I.C.
A. C. MASON, B.Sc.(Lond.), F.R.I.C., *Physical Chemist.*
F. H. VANSTONE, Ph.D.(Wales), A.Inst.P., *Physicist.*
A. E. FLOOD, M.A.(Cantab.), Ph.D.(Manc.), *Organic Chemist.*
H. J. PHILCOX, F.S.T.A.
Miss A. V. DELAP, B.A., B.Sc.(Dublin), *Botanist.*
Miss E. M. FORD, B.Sc.(Lond.), A.R.C.S., *Assistant Botanist.*
J. F. BATES, H.N.C.(Chem.). (*Appointed November, 1953.*)
- Special Assistant:*
Miss M. E. BUNYARD, A.R.R.C.
- Assistants (Scientific):*
- | | |
|--------------------------------------|------------------------------------|
| H. HUTCHINS, F.S.T.A. | Miss E. M. H. WILSON. |
| Miss B. M. KIDWELL. | Miss L. D. GOODGER. |
| Mrs. R. D. SOUTER. | Miss K. RUSSELL. |
| (<i>Resigned July, 1954.</i>) | Miss J. M. BRADBURY. |
| R. NEVE. | Miss E. M. BRETT. |
| E. C. WILLS. | (<i>Appointed August, 1954.</i>) |
| Miss M. E. JENNER. | P. J. COOPER. |
| Mrs. E. M. TAYLOR. | (<i>Appointed August, 1954.</i>) |
| (<i>Resigned April, 1954.</i>) | |
| Miss P. A. NEWMAN. | |
| (<i>Resigned September, 1954.</i>) | |
- Plant Pathology:** R. V. HARRIS,* D.Sc.(Lond.), A.R.C.S., D.I.C., M.I.Biol.
M. H. MOORE, M.Sc.(Reading), Ph.D.(Lond.), Dip.Hort.
(Reading).
A. F. POSNETTE, M.A.(Cantab.), Ph.D.(Lond.), A.I.C.T.A.
F. W. ANDREWS, D.Sc.(Lond.), Ph.D.(Lond.), A.R.C.S.
(*Transferred and attached Scientific Liaison Section April, 1954.*)

Plant Pathology—continued

J. E. CROSSE, Ph.D.(Lond.), B.Sc.(Birmingham).
D. S. KIRKHAM, B.Sc.(Lond.).
P. W. TALBOYS, Ph.D.(Lond.), D.I.C., M.I.Biol.
J. T. LEGG, B.Sc.(Lond.).
Miss M. BENNETT, B.Sc.Hort.(Lond.), Dip.Hort.(Swanley),
*Field records ; also attached Entomology and Plant Protective
Chemistry.*
P. J. ORMEROD, B.A.(Cantab.).
J. F. WILSON, B.Sc.(Wales).
R. CROPLEY, N.D.H.(Hons.), Dip.Hort.(Reading).
Miss E. C. E. ELLENBERGER, B.Sc. Hort.(Lond.).
Miss P. WEBB, B.Sc.(Lond.) *Field records ; also attached
Entomology and Plant Protective Chemistry.*

Assistants (Scientific) :

R. D. SOUTER.	M. J. MACEY.
Miss J. RICHARDSON.	B. S. BROOK.
Miss C. R. WESTWOOD.	(Appointed November, 1953.)
J. E. STICKELS.	Miss A. M. DAVISON.
Miss J. KAY.	(Appointed March, 1954.)
(Resigned August, 1954.)	Miss A. STILL.
Miss W. PHILLIPS.	(Appointed August, 1954.)
(Resigned October, 1953.)	Miss D. LAURENCE.
Mrs. R. STILL (née GAMBLE).	(Appointed September, 1954.)
(Resigned July, 1954.)	

Entomology :

A. M. MASSEE,* O.B.E., D.Sc.(Lond.), F.R.E.S.
G. H. L. DICKER, Ph.D.(Lond.), A.R.C.S., F.R.E.S.
R. S. PITCHER, Ph.D.(Lond.), Dip.Agric.(Wye), Dip.Ento.(Wye),
Nematodes.
M. D. AUSTIN, F.R.E.S., *Red Spider Investigations in Essex.*
(Resigned September, 1954.)
Miss E. COLLYER, Ph.D.(Lond.), *Beneficial Insects of Fruit.*
R. C. MUIR, B.Sc.(Birmingham), F.R.E.S., *Ecological studies.*
L. A. LICKERISH, M.A.(Cantab.), B.Sc.(Lond.), *Bio-assay of
Insecticides, attached to Plant Protective Chemistry.*
(Appointed July, 1954.)
Mrs. J. R. LLEWELYN (née GROVES). Ph.D.(Lond.), B.Sc.Hort.
(Reading), F.R.E.S., *Codling Moth and other fruit
Tortricids.*
J. B. BRIGGS, B.Sc.Hort.(Reading), *Study of the Geometridae.*

Assistants (Scientific) :

E. F. SOUTER.	D. J. CARDY.
Miss S. O. PHILCOX.	(Appointed January, 1954.)
(Resigned July, 1954.)	Miss D. ENGLISH.
Miss D. V. MERTON.	(Appointed August, 1954.)
D. K. BROWN.	

**Plant Protective Chemistry: A. H. M. KIRBY, M.Sc.(Lond.), Ph.D.(Lond.),
A.R.I.C.**

M. ALLEN, B.Sc.(Lond.).
R. P. TEW, A.R.I.C.
R. G. GAMBRILL.
Miss W. M. PHILLIPS, B.Sc.(Lond.).
E. L. FRICK, B.Sc.Agric.(Wales).

Plant Protective Chemistry—continued.

*For Biological Assistant, see L. A. LICKERISH, Entomology Section.
(Appointed July, 1954.)*

Assistants (Scientific):

Miss R. H. BISHOP. (Resigned November, 1953.)	Miss C. A. PUGH. (Appointed November, 1953.)
Miss J. A. HITCHCOCK.	G. J. HITCHINGS.
N. A. BECKETT.	(Appointed June, 1954.)
Miss B. C. BELTON.	

Fruit Storage Investigations : *(In collaboration with the Ditton Laboratory.)*

H. B. S. MONTGOMERY, B.A.(Dublin), Ph.D.(Lond.), D.I.C.
B. G. WILKINSON, M.A., Ph.D.(Cantab.). *(Transferred to
D.S.I.R. October, 1954.)*
G. F. BISHOP, B.A.(Cantab.). *(Appointed October, 1953.
Resigned October, 1954.)*
M. A. PERRING. *(Appointed August, 1954.)*
K. F. HOBLING. *(Appointed August, 1954.)*

Assistant (Scientific):

Miss E. LAWRENCE.

Scientific Liaison: H. B. S. MONTGOMERY.

J. H. WALKER, B.Sc.Agric.(Reading).
A. C. PAINTER, O.B.E. *Part-time as from July, 1954.*
E. G. COKER, B.Sc.Hort.(Lond.), N.D.H.
A. E. H. RUTTER, B.A.(Cantab.), Dip.Agric.(Cantab.).
F. W. ANDREWS, D.Sc.(Lond.), Ph.D.(Lond.), A.R.C.S.
(Attached April, 1954.)

Clerical Assistant :

Miss M. E. EMM.

Assistant (Scientific):

Miss J. C. IRVING.

Meteorological Records : G. F. TROWELL.

C. H. W. SLATER.

Librarian : S. R. BALL, B.A.(Lond.), F.L.A.

Photographer : E. YOXALL JONES.

Assistants (Scientific):

Miss M. M. JOYCE. *(Resigned April, 1954.)*
Miss B. M. SMITH. *(Appointed August, 1954.)*

FARM STAFF.

Farm Supervisor: F. H. VILLIERS, M.Sc.Agric.Econ., B.Sc.Agric.(Reading), N.D.A.

Assistant Plantations Officer: Miss B. F. SEYMOUR.

Experimental Nurseries : T. V. DIXON. *(Resigned October, 1954.)*

H. R. J. BYFORD. *(Appointed October, 1954.)*

Experimental Greenhouses : M. M. MACNEILL, B.Sc.Hort.(Wye), C.D.H.(Glas.).
A. TIDY.

Bradbourne Gardens : Miss G. COUCH. *(Resigned October, 1954.)*

Miss D. RHODES. *(Appointed October, 1954.)*

Workshops : G. G. M. WELLER.

F. A. KING. *Laboratory Instrument Mechanic.*

K. W. G. BUNYARD. *Laboratory Instrument Mechanic.*

Farm Staff—continued.

Farm Staff with twenty-five years' service :

C. BATES B.E.M. (39).	H. CRITTENDEN (31).
J. DENYER (34).	E. HAYES (31) (<i>Caretaker</i>).
E. WENHAM (34).	W. HENSON (30) (<i>Fruit Foreman</i>).
W. HORTON (32).	W. JENNER (28).
J. TANNER (32).	

ADMINISTRATION.

Secretary : T. R. LITTLEHALES.

Assistant to the Secretary : R. L. OXLEY.

Book-keeper : P. R. WOOD.

Director's Personal Secretary : Miss P. S. D. GOLD.

Clerical Staff : Miss J. M. COY, Miss L. SHERRATT (*Resigned August, 1954*), Mrs. P. M. ADAMS (*née RAYFIELD*), Miss R. M. WICKHAM, Miss I. CROSS, Mrs. F. J. PARKES, Miss I. BELL, Miss P. RAYFIELD, Mrs. K. D. MILLGATE (*Resigned January, 1954*), Miss D. L. CARD, Miss P. M. LINCOLN (*Resigned August, 1954*), Miss G. E. WRIGHT, K. C. GOODWIN (*Resigned August, 1954*), Miss A. SLOMAN, Miss E. J. MORLEY, Miss D. M. SOLLY, Miss M. GETHIN, Miss C. S. KENWARD (*Resigned April, 1954*), Miss S. V. M. PRESTON (*Appointed August, 1954*), Miss E. D. DAVIS (*Appointed August, 1954*), Miss M. A. BAKER (*Appointed August, 1954*), Miss A. TUCK (*Appointed September, 1954*), L. G. MARTIN (*Appointed October, 1954*), Miss Y. E. SIMMONDS (*Appointed October, 1954*).

Housekeeper : Miss A. M. BOOTH.

VISITORS.

Tours of the Station are arranged by appointment on Tuesday and Thursday afternoons. Visitors with special interests are received by appointment on the mornings of these days and may then join the general tour later if they wish. Wednesdays and Fridays are reserved for visiting research workers who also should make an appointment to ensure that a useful programme for the visit can be prepared.

All visitors wishing to see the work of the Station should go to the Reception Room in the N.F.U. Building at the Research Laboratories.

Visitors coming by road should take the turning to East Malling, opposite "The Bull", Larkfield, on the main London-Maidstone road. The entrance gate to the Research Station is on the left, opposite the "King and Queen" in East Malling.

Bus Service : From Maidstone by the Maidstone and District Motor Services Limited, every 20 minutes from Maidstone to East Malling.

Passenger Station : EAST MALLING HALT (British Railways, Southern Region).

Goods Station : AYLESFORD (British Railways, Southern Region).

Correspondence : All correspondence should be addressed to the East Malling Research Station, near Maidstone, Kent.

Telephone : West Malling 3033 (3 lines). *Telegrams :* Research, East Malling.

THE COMMONWEALTH BUREAU OF HORTICULTURE AND PLANTATION CROPS

*Accommodated at Bradbourne, the Administrative Headquarters of the East Malling
Research Station.*

STAFF.

Director : D. AKENHEAD, O.B.E., M.A.(Oxon.), B.Sc.Agric.(Lond.).

Consultant Director : F. R. TUBBS, M.Sc.(Lond.), Ph.D.(Lond.), A.R.C.S., D.I.C.,
F.L.S.

Assistant Director : G. K. ARGLES, Dip.Hort.(Wye), A.I.C.T.A.

Assistants : V. H. GOLDSCHMIDT, Ph.D.(Berlin).

J. DUNDAS, B.Sc.For.(Edin.).

Miss P. J. ROWE-DUTTON, B.Sc.Hort.(Lond.).

Mrs. E. ULYATT, Dip.Hort.(Eisgrub.).

Miss E. M. J. NAPIER, B.Sc.Hort.(Lond.). (*Appointed April, 1954.*)

Clerical Staff : Miss M. B. ROGERS, Miss M. M. DURLING, Mrs. J. WEBB (*Resigned
July, 1954*), Miss M. Edwards, Miss J. BARKER (*Appointed
April, 1954*), Miss A. J. POLLARD (*Appointed August, 1954*).

NATIONAL AGRICULTURAL ADVISORY SERVICE

Accommodated East Malling Research Station.

Telephone : West Malling 2418.

PROVINCIAL ADVISORY OFFICER—FRUIT, SOUTH-EASTERN PROVINCE

W. G. KENT, N.D.H.

Clerical Assistant : Mrs. J. E. WALDREN. (*Resigned October, 1953.*)

Mrs. D. NYE. (*Appointed October, 1953.*) (*Part-time.*)

GENERAL DEVELOPMENT AND ACTIVITIES

INTRODUCTORY.

In last year's Report the completion of the first phase of the building scheme was recorded. In this Forty-second Report, the Executive Committee would inform Members with some satisfaction that the whole scheme for the extension of the Station's laboratories is virtually completed and that all Sections are now established in their new quarters.

While building operations have been going on, it has been particularly satisfactory to observe how little effect there has been on the work in progress, though the peace and quiet necessary for a research worker to sit back and review his work have certainly been lacking.

The reliance placed upon us by those whose business it is to finance research has again been indicated by the request to the Director by the Chairman of the Agricultural Research Council to prepare a memorandum on the problems now facing the apple industry. With the assistance of numerous correspondents all over the country among both growers and research workers, who answered the Director's questionnaire, a comprehensive memorandum was compiled and this, having been adopted by the Council, was forwarded to a joint A.R.C./A.I.C. Committee. Its contents may well influence the course of fruit research for the next decade.

Although in these years of intensive research in the orchard, which to many members of staff is their principal laboratory, an experimental farm is necessarily expensive, it is satisfactory to note that, despite the cold sunless summer, our sales of produce from a now very much reduced productive acreage were well up to standard. The Committee feel that this calls for congratulation to the farm management.

GOVERNING MEMBERS.

The Governing Body completed its three-year term of office in June. As a result there are several changes to report among our Governing Members. We are particularly sorry to report the retirement of two members who have served both on the Governing Body and the Executive Committee for a long time, during which each has done much to further the work of the Station.

Mr. Alfred Day was first appointed by the Kent Branch of the N.F.U. in 1928 and elected a member of the Executive Committee in 1933. His interest in hops is well known and his advice on the old Hop Committee was much valued. In 1941, when we first undertook the farming of the Bradbourne Estate, Mr. Day served as a member of the original Arable Farm Committee and gave valuable assistance in equipping the farm with the machinery we needed for arable farming on a larger scale than we had previously attempted.

Mr. G. T. Cook was first nominated by the Research Fund Committee of the Institute of Brewing in 1937 and became a member of the Executive Committee from that date. Like Mr. Day, he has taken a close interest in the Station's programme of hop research, particularly in relation to the brewing qualities of the new varieties and of hops grown under different cultural systems.

Both Mr. Day and Mr. Cook were regular attendants and will be greatly missed at Executive Committee meetings.

Mr. E. P. Day has been nominated to succeed his uncle as one of the representatives of the Kent N.F.U. and Professor Sir Ian Heilbron has taken the place of Mr. Cook.

Having served as the representative of the Royal Society for nine years, the maximum permitted period, Professor E. J. Maskell retired and Professor T. A. Bennet-Clark was nominated as his successor.

Mr. A. Norman was nominated to replace Mr. H. A. Haile as one of the representatives of the Central Headquarters of the National Farmers' Union.

Mr. M. V. Courage retired after representing the Council of the Institute of Brewing since 1948 and Mr. J. E. Martineau was nominated in his place.

Dr. S. C. Pearce was re-elected as representative of the Staff Council in May.

It is not always realized how much members of our Governing Body contribute to the well-being of the Station and we must therefore take this opportunity of expressing our gratitude to those who have now retired ; we hope the severance of their official connection with us will not mean that we shall lose contact with them altogether. At the same time we must extend a warm welcome to those who became governors of the Station this year for the first time.

About twenty Governing Members saw the special programme arranged for them on Thursday, 8th July, 1954. As the extension to the Manwaring building was taking shape, the occasion was opportune for showing the arrangement of the laboratories in the new wing. This was followed by a description of collaborative work by the Plant Pathology and Biochemistry Sections on the relation between certain organic constituents of the varieties studied and resistance to Apple and Pear Scab. An outline of the fruit breeding programme, existing and projected, was then given, and the techniques employed at successive stages of breeding and selection were followed, both under glass and in the field. Methods of growing apple plants in nutrient solutions were demonstrated, including two types of mist culture for studying nutritional and growth problems respectively, and water culture for studying the effect of pH on root growth.

COMMITTEES.

Following the re-nomination of the Governing Body the Executive Committee were elected at the Annual General Meeting in June. At the first meeting of the Executive in the beginning of October, 1954, Mr. T. Neame was re-elected Chairman, Professor V. H. Blackman, Vice-Chairman, and Mr. J. W. S. Mount, Chairman of the Finance Sub-Committee. The full list of members of the Committee is given at the beginning of this Report.

The previous December, the desire had been expressed for greater flexibility in the constitution of the Executive Committee, whereby the services of scientists of experience and fruitgrowers in districts not already represented might be recruited. In January, 1954, therefore, an Extraordinary General Meeting of the Society was convened at which the Articles of Association were amended to allow of the increase in the number of co-opted members of the Executive Committee from four to seven. The seven co-opted members for the three-year period from 1954 are Sir Albert Stern, Sir Edward Salisbury, Captain R. Wellington and Professor F. G. Gregory, all of whom have served for some years, with the addition of Professor E. J. Maskell, Mr. P. Wheldon and Professor R. H. Stoughton.

At the same meeting of the Executive members of the four sub-committees for Finance, Building, Plant Prices and Farming were also elected.

We do not think that the names of the members of these sub-committees have previously been given in this Report ; but as many of them give much time to the business of the Station, Members may wish to know who they are. The three Chairmen are *ex officio* members of all sub-committees ; the other members are :

- FINANCE : Mr. S. R. Dixon, Sir Edward Hardy, Sir Albert Stern and Mr. J. F. Towner.
- BUILDING : Mr. E. P. Day, Mr. S. R. Dixon, Mr. W. T. Edmonds, Lieut.-Colonel C. L. Newitt, Mr. J. F. Towner, Mr. R. D. Wickham and the Staff Representative.
- PLANT PRICES : Mr. J. S. Chivers, Mr. L. J. Cook, Mr. W. T. Edmonds, Mr. A. S. Fromow, Mr. E. Bruce Gibson, Mr. T. H. Rivers, Mr. W. P. Seabrook and Mr. G. E. Toker.
- FARMING : Mr. W. Alexander, Mr. S. R. Dixon, Mr. O. English, Mr. B. S. Furneaux and Mr. D. J. Moor.

The Finance and Executive Committees met as usual quarterly throughout the year. The Building Committee (Chairman, Mr. J. F. Towner) met in April to consider progress in building maintenance and the laboratory extensions, and plans for building scrubber stores. The Plant Prices Sub-Committee (Chairman, Mr. W. T. Edmonds) met in London in July to arrange the distribution of new rootstocks and virus-tested mother trees and to fix prices. The following subjects dealt with by these Committees are not referred to in other sections of the Report.

Laboratory Extensions.

The progress of the extensions to the E.M.B. and Manwaring Buildings and other changes at the laboratories was detailed in the last Report. Although the whole scheme was not completed by the end of September, 1954, we can now report that all Sections have settled down in their new quarters. Early in the year the Director and his secretarial staff moved to the upper floor of the N.F.U. Building, while the Scientific Liaison Section were brought together under one roof, mainly on the ground floor of the same building, which has been adapted for the reception of visitors and also houses Mr. W. G. Kent. At the same time, Mr. Hoblyn also left Bradbourne for a room in the new wing of the E.M.B. Building, adjacent to the rest of the Statistics Section.

In July, the new part of the Manwaring Building was completed and the Pathology and Plant Protective Chemistry Sections took possession of the first and ground floors respectively. In this extension, space has been provided in the roof as a demonstration centre for the Scientific Liaison Section. Following this move, the old part of the Manwaring Building was handed over to the building contractors, not for the first time since it was built in 1927, to be adapted for the use of the Entomology Section and give additional accommodation for the chemists. These adaptations have since been completed and Entomology have given up their temporary home in the Physiology Section and taken up their permanent quarters. During the same period there have been changes in the old part of the E.M.B. Building to meet the needs of the Pomology Section. There are still one or two small ancillary buildings to be completed but, for the most part, the changes in and additions to our laboratory accommodation, which have occupied the minds of the Committee and Staff for something like seven years,

have been accomplished. That this has been done without serious detriment to the work is a credit to all concerned and the Committee are grateful to the Ministry of Agriculture and the Agricultural Research Council who appreciated the need and enabled the work to be carried out.

Other Building Operations.

In detailing other buildings that have been constructed and repairs and renewals made, the Committee would express its appreciation of the work of the Station's maintenance team, so ably directed by Mr. Villiers, without the aid of which much of the work could not have been done. Thus, four small scrubber stores, each to hold 750 bushels of apples, that have been added to our fruit storage capacity were built with our own labour, the specialist cooling installations being contracted for by J. T. Herbert, Ltd. These were ready for use as cold stores for the 1954 crop and caustic soda scrubber apparatus for gas storage will be added in the Spring, 1955.

The changes at Bradbourne are described in some detail in the report of the Library Committee (see p. 30) in so far as they affected the library. In 1939, when Bradbourne House was bought and repairs carried out, the exigencies of war and shortage of money limited repairs to the old house to essentials. Some additional support to the second floor of the East Wing was provided to take the weight of the library, but, after some 14 years' additions had been made, it became obvious that this was now insufficient. Accordingly, the whole of the library was shifted to the ground floor, where the support for the great weight of all this literature is more adequate. This has entailed the removal of the Secretary and his staff to other quarters upstairs, while the old dining room facing south, formerly occupied by Dr. Montgomery, has now become the Staff Common Room. In the months that followed the move, very necessary repairs to the interior construction of the east end of the house have been undertaken and are still in progress.

As described later, the Sports Pavilion was completed in time for the Members' Cricket Match, when Lord Cornwallis visited us to declare it open.

The total sum subscribed towards the building of the Pavilion by Members of the East Malling Association and the Staff was £2,649. Of this amount £2,528 has now been expended. Nearly half of this represents work done by the Station's maintenance team, the only part contracted for by outside firms being the shell of the building and the construction and installation of glazed sliding doors around the verandah. There remains in hand a balance of £121, which will be held towards the maintenance of the building.

Two water tanks to hold 15,000 gallons have been installed at the south-west corner of Great East Field. These will ensure a regular flow of water to the laboratories, the greenhouses and for spraying during the day time, when the Water Company are unable to guarantee an adequate supply.

The boundary wall on the north-west corner of the Bradbourne Estate has been rebuilt and set back to make safer the dangerous corner on the Larkfield-East Malling road. We have received the thanks of the County Surveyor for this improvement. In Bradbourne Lane the crumbling ragstone wall has been removed and replaced by a fence set back from the road. The bank adjoining the road has been sloped and will be maintained by the County Council.

A new cycle shed has been constructed along the east wall of the new Manwaring extension and it is now possible for all cycles to be stored under cover. The old cycle shed by the oast-house has been adapted for the use of motor cycles. The problem of

adequate parking space for the increasing number of staff and visitors' cars during the day time continues to cause concern to the Estate Committee of the Staff Council.

The old wing of the E.M.B. Building has been rewired to cater with safety for modern electricity needs in this part of the laboratories.

Trial and Distribution of New Varieties.

The need to regularize the routine of trial and distribution of varieties of fruits bred at the Station has been considered. In future the first research trials will be conducted at the Station or at the National Fruit Trials' centres at Brogdale and elsewhere, other Research Institutes being asked to co-operate for specific ends. The valuable field tests on growers' farms will be continued but will be less haphazard than formerly, the Station propagating and supplying the varieties under test with appropriate controls. No propagation or distribution will be permitted during these stages of trial until the Station decides to name and send out a new variety. When this is done, the variety will be described in the Annual Report, and then released initially to Members of the East Malling Association. Nurserymen will be supplied with healthy material under the mother tree scheme. Growers who collaborate with us by accepting varieties for trial will be asked to guarantee to destroy or framework trees of varieties that it is decided to discard ; but when a variety is released, they will be allowed to distribute it, provided that their material is healthy.

By mutual agreement, the Station will also undertake to propagate virus-free material of varieties raised at other Institutes and release them through the mother tree scheme.

The Grange and the Canteen.

During the years when accommodation and food were in very short supply, the Station acquired, among other properties, the Grange for use as a hostel for single members of staff, and provided facilities for a Canteen.

During the past two years the finances of the former have been causing some concern. Members of staff with permanent appointments now find it easier to find accommodation on their own and many prefer to do so, while the supply of single postgraduate students is insufficient to keep the Grange full. This tendency comes at a time when the furnishings and equipment need replacement and this can be ill afforded. The Committee are therefore watching the situation closely and, if there is no improvement as a result of rent increases that have had reluctantly to be made, more drastic measures may be needed.

The Canteen on the other hand obviously continues to supply a real staff need and, under the able management of Miss Booth, with the co-operation of the Staff Advisory Committee, something like one hundred lunches are now served daily, apart from the provision of tea and catering for Open Day lunches. During the past three years the Canteen has not only remained solvent but has saved £150 as a reserve from which major renewals to equipment may be made when necessary.

Publication of Annual Reports.

The Research Report for the year ending 30th September, 1954, may be rather smaller than in former years as, in order to spread the writing of reports, usually done during the early winter, more uniformly over the year and leave more time for the consideration of research programmes, estimates and other matters that have also to

be dealt with during the autumn and winter, it will from henceforward only include papers actually completed during the academic year. If there is any deficiency this year, it should be compensated for in the 1955 Report.

A detailed Index of the Station's Annual Reports is in preparation. Apart from its general usefulness to research workers and others interested in horticultural research during the last forty years, this Index will be a material aid to the younger generation of research workers here, as the number of those who can personally remember the research that was done in the Station's early years grows gradually less.

ANNUAL GENERAL MEETING.

The Annual General Meeting was held at Bradbourne on the 30th June, 1954, under the Chairmanship of Mr. T. Neame.

The Director presented the Annual Reports for the year October, 1952, to September, 1953, and emphasized their importance in providing information on all aspects of the Station's work and other activities.

Dr. Tubbs said that the Station looked forward to the completion in October of the laboratory building programme, and paid tribute to the staff for the way in which the research programme had been carried on from the commencement of the building operations with little or no interruption.

In moving the adoption of the report, Mr. G. E. Toker stressed the importance of the continuance of the close contact between research workers and growers which is so valuable in the work of the Station. He also referred to the retirement of Mr. Alfred Day from the Governing Body and welcomed Mr. E. Peter Day as his successor. Mr. Alfred Day seconded the adoption of the report and congratulated all those associated with its production; he emphasized the still urgent need for research on hops.

The reports were unanimously adopted.

The Balance Sheet and Accounts for the year ending 30th September, 1953, were presented by the Finance Chairman, Mr. J. W. S. Mount. He referred to the reduction of the farm deficit from £24,238 to just under £20,000, and drew attention to the increase in the Capital Fund by the amounts recently received from the Ministry in connection with the laboratory extensions scheme.

The adoption of the report was proposed by Sir Albert Stern who expressed the Finance Sub-Committee's appreciation of Mr. Mount's services as Chairman. He also commented on the very satisfactory way in which Mr. Villiers ran the experimental farm for the service of research.

Mr. R. D. Wickham seconded the adoption of the report, referring to the Sports Pavilion Fund and congratulating the staff and Members on an effective and gratifying collaborative achievement.

The Balance Sheet and Accounts were unanimously adopted.

The re-election of the auditors, Messrs. J. Dix Lewis, Caesar, Duncan & Co., for the ensuing year, was proposed by Mr. S. R. Dixon, seconded by Mr. E. P. Day, and carried unanimously.

FINANCE.

The Research Account.

In total the Block Grant again shows an increase on the previous year. This is mainly reflected in the salaries, wages and superannuation section of the account, the laboratory and maintenance accounts showing a smaller proportion of the total increase.

RESEARCH ACCOUNT.

1st October, 1953, to 30th September, 1954.

EXPENDITURE.				INCOME.			
	£	s.	d.		£	s.	d.
Salaries, National Insurance and Superannuation ..	118,208	14	0	Salaries, National Insurance and Superannuation ..	106,799	0	0
Laboratory Expenses and Equipment ..	10,644	0	2	Balance due from Ministry of Agriculture ..	11,409	14	0
General Maintenance Expenses	14,941	12	6	Maintenance Grant ..	23,485	0	0
				Contribution from East Malling Association ..	1,343	0	0
				Sundry receipts ..	574	13	7
				Balance net deficit ..	182	19	1
	£143,794	6	8		£143,794	6	8

The Experimental Farm Account.

The income and expenditure on the Experimental Farm is summarized below, and shows an increase in the excess of expenditure over income when compared with the previous year. Once again it is emphasized that the cost of running the experimental farm cannot be met from its income, and the Ministry, fully understanding this fact, made provision in accordance with the Station's estimates; the cost was slightly below the amount provided.

EXPERIMENTAL FARM ACCOUNT.

1st October, 1953, to 30th September, 1954.

EXPENDITURE.				INCOME.			
	£	s.	d.		£	s.	d.
Farm Wages ..	29,735	1	8	Sale of Produce and Crops ..	24,303	9	5
Farm Manures and Sprays ..	3,232	10	5	Sale of Livestock ..	2,214	8	4
Livestock ..	1,826	6	0	Sundry Receipts ..	2,256	4	7
General Farm Expenses, Implementments and Repairs ..	20,413	9	11	Balance being excess of Expenditure over Income ..	26,433	5	8
	£55,207	8	0		£55,207	8	0

THE EAST MALLING RESEARCH STATION ASSOCIATION.

Membership of the Association at the end of September, 1954 was 1,912, a reduction of 64 on last year's figure. The Committee wish to renew their request to the Members, made last year, to encourage fruitgrowers to join the Association and so help to support the work of the Station.

The Association has again made its contribution to the Research Grant, to Staff Amenities and in the payment of evening class fees for junior members of staff.

The bank overdraft has been reduced from £3,897 at the 30th September, 1953, to £2,083.

THE EAST MALLING RESEARCH STATION ASSOCIATION INCOME AND
EXPENDITURE ACCOUNT.

1st October, 1953, to 30th September, 1954.

EXPENDITURE.			INCOME.		
	£	s. d.		£	s. d.
Research Grant	1,343	0 0	Subscriptions and Donations	3,962	6 7
Evening Class Fees	3	10 0	Miscellaneous Receipts ..	16	3 1
General Expenses	1,150	16 1	Interest on Investments ..	153	0 0
Staff Amenities	200	0 0	" Loan	24	10 6
Surplus	1,501	8 4	Property Accounts—		
			Rents received 288	19 5	
			Less repairs, etc. 246	5 2	
					42 14 3
	£4,198	14 5		£4,198	14 5

EAST MALLING RESEARCH STATION ASSOCIATION BALANCE SHEET.
at 30th September, 1954.

	£	s. d.		£	s. d.	£	s. d.
<i>Accumulated Members' Fund :</i>			<i>Freehold Property at Cost :</i>				
As at 30th September, 1954 ..	17,727	3 4	" Fircroft ..	2,577	16 5		
Add Surplus for the year ..	1,501	8 4	" Grange ..	6,214	17 2		
	19,228	11 8	31 Buckland Lane	2,567	1 2		
			59 Grace Avenue	2,299	6 0		
			75 Grace Avenue	2,854	17 4		
<i>Liabilities :</i>						16,513	18 1
Bank overdraft	2,083	17 11	<i>Investments at Cost :</i>				
Sundry Creditors	691	17 7	£2,000 3% Funding				
			Stock, 1966-68	2,000	0 0		
			£3,720 11s. 2d.				
			2½% Consols	3,000	0 0		
			(Valuation 30th September,				
			1954, £4,497)			5,000	0 0
			Loan Account			480	0 0
			Sundry Debtors			10	9 1
	£22,004	7 2				£22,004	7 2

MEMBERS' DAYS.

Four days for Members and Associates were held, with a total attendance of 680.

A winter meeting in the Great Hall at Bradbourne on 12th November, 1953, was devoted to the effect of recent developments on the spray programme suggested for fruit plantations. The control of pests and diseases of both top and soft fruit was discussed, with emphasis on the departures from the recommendations in the spray programme issued by the Station in 1949.

On 29th April, 1954, manurial trials in progress on apples, plums and strawberries were shown after a very brief review of past research. Two long-term experiments on apples were described in detail and their results discussed. The problems of the ideal granular fertilizer and the possibility of inadequate soil moisture limiting response to manures were also discussed.

The subject on 10th June, 1954, was the importance of virus diseases to propagators of tree fruits, with reference both to scion wood and rootstocks. An account was given, with results, of the very intensive testing of plant material that had been undertaken, including many of the trees on the station. This work had led up to the production of tested mother trees and re-cloned rootstocks. During the day Members saw examples of infected and healthy trees, including a new cherry plantation planted specifically to study the effect of viruses on growth and cropping.

Following the recent detailed survey of the soils of the Research Station, the more important soil types occurring on the Station were described on 23rd September, 1954. Soil profiles had been prepared, and, during visits to a number of plantations, the effects of soil type and of such factors as depth, texture, acidity and moisture on tree growth were demonstrated, and also the pronounced residual effect of previous soil management.

For the first time this year a summarized report of each Members' Day was prepared and distributed to all Members. While these summaries can in no way take the place of attendance at a Members' Day, they have proved valuable to those who can attend as a reminder of the main points raised and serve to keep those who cannot come in touch with these events.

AMOS MEMORIAL LECTURE.

The sixth Amos Memorial Lecture was delivered by Professor R. H. Stoughton on 12th November, 1953, when it was once again the turn of Wye College to act as host to the 300 growers, scientists and students who assembled to hear his paper on Growth and Development of Fruit Plants. At the close he dealt ably with a variety of questions on the topics he had covered.

The Principal had arranged an interesting tour of the fruit experiments and plantations of the College Horticultural Department during the early part of the afternoon. Before the lecture began, a seat made in the College workshops from old oak taken out of the College buildings was presented to the staff of the Research Station to mark the fortieth year of the Station's history. This happy reminder of the close associations between Wye College and East Malling is now in the Cricket Pavilion.

STAFF.

During the year news reached us of the death of two former members of the Administrative Staff, both of whom gave valuable service to the Station in their time. Miss M. K. Glover, who died in September, 1953, was the first Secretary of the Station from 1919-1933. During her time the N.F.U., Manwaring and E.M.B. were only some of the buildings erected, while the Research and Administrative Staff grew from five to thirty-nine. In August, we heard of the death of Miss L. M. Read as a result of a sailing accident. Miss Read was personal secretary to the Director from 1945 to 1951.

To turn to a more cheerful matter, on this occasion perhaps we may be allowed to anticipate and report an event that has given particular pleasure to many members of staff, that is the award in the recent New Year's Honours, by H.M. The Queen, of the British Empire Medal to Charlie Bates. Thus is recognized some 39 years' service to the Station as farm foreman and latterly, since his retirement, as storekeeper—a notable event.

As anticipated last year, Dr. R. L. Knight, coming to us from the Sudan, took over his duties as a plant breeder in the Pomology Section in May. Previously, Mr. G. C. Head had joined the frost team in November. The Section has lost the services of two members on their marriage during 1954. In July, Miss E. C. Thompson resigned to marry Mr. G. M. Jolly of the Statistics Section. Miss Thompson came to the Station from the Royal Holloway College in 1936; although her main line of research lay in the histological studies, she had numerous other interests, for example, for many years she has recorded the time of blossoming of a wide range of fruits. When the staff canteen was started in 1941, she was Secretary of the Committee that ran it for several years and, in that capacity, was largely responsible for its initial success; she was Secretary of the Staff Council from 1948 to 1954. We wish them both every happiness. Miss

Thompson was succeeded by Miss J. M. Hay, who joined the Section in July. In September, Miss J. M. Paton, who came in October, 1948 to assist Miss Glenn in recording Pomology experiments in the field, became Mrs. Ariel. Although she did not resign her post until later in the year, we must record that she has now left, with the good wishes of us all.

In September, Mr. G. E. Davies who had been in charge of the Statistics Section's special experiments in the field since October, 1951, left to take up an appointment with the Hill Farming Research Organization.

In October, 1953, Mr. I. F. Bird joined the Imperial College team working with the Plant Physiology Section and, in November, Mr. J. F. Bates was appointed to undertake routine chemical analyses in the Biochemistry Section.

We were sorry to learn, in April, that Dr. F. W. Andrews, who had been appointed to the Pathology Section the previous year for studies of host-parasite relations in diseases of hops and fruit, had had to relinquish his post through ill health ; we are glad, however, that he is able to remain with us to undertake the important task of compiling a comprehensive index of the thirty-three volumes of the Station's Annual Report.

In July, Mr. L. A. Lickerish, who came from Pest Control Ltd., joined the Entomology Section ; he is attached to the Plant Protective Chemistry Section for work on the bioassay of insecticides.

As was reported last year, the A.R.C.-Pettar-ACE collaborative investigations on the Fruit Tree Red Spider Mite were concluded at the end of 1953 ; in September, 1954, Mr. M. D. Austin, who had been in charge of the Field Laboratory at Great Braxted for ten years, resigned his appointment.

Mr. A. C. Painter first came to the Station in June, 1925, as assistant recorder, later taking charge of the marketing of our fruit until 1939, when he returned to the Navy. After the war he came back to us as a member of the Scientific Liaison Section, in which capacity many visitors to the Station must have got to know him during the post-war years. In July, he reached the retiring age but we are very glad that he is remaining with us, on a part-time basis, his main activity being to edit the Research Report. Those who know Mr. Painter best will not be surprised to learn that, part- or full-time, he is still to be seen here most days working as usual long after most of his colleagues have gone home.

The collaborative investigations with Ditton Laboratory into fruit storage, of which Dr. Montgomery is in charge of that part concerning the effect of orchard factors, continued during the year and Mr. M. A. Perring and Mr. K. F. Hobling joined the team in August. At the end of September some reorganization of the staff took place and Dr. B. G. Wilkinson was transferred to the D.S.I.R., while Mr. G. F. Bishop, who had been appointed in October, 1953, resigned.

Changes among the Assistant (Scientific) staff are still too numerous to write of individually, though all are recorded in the Staff List. During the year there have been fourteen resignations for various reasons and fifteen appointments. We should like to single out for special mention, if we may, Mr. K. C. Hyrycz, formerly a member of the Polish Air Force, who after serving his horticultural apprenticeship in England on the farm, joined the Pomology Section in February. We congratulate him on obtaining the National Diploma in Horticulture towards the end of 1954.

There have been no changes in the senior Administrative Staff, those among the junior posts are listed as usual. We may perhaps mention here the retirement of Miss L. Sherratt for domestic reasons, after seven years' service, since for several years

she has been responsible for the office work in connection with the distribution of experimental material, both to Members and research workers at home and abroad.

On the farm we must record the resignation in October of Mr. T. V. Dixon, who has been in charge of the experimental nurseries engaged in the propagation of fruit plants for research purposes and for distribution to Members since February, 1947. We wish him success in his new post. He is succeeded by Mr. H. R. J. Byford, who comes to us from Mr. C. P. Norbury's farm at Sherridge, near Malvern. Also attached to the Farm Staff, Miss G. Couch who has been in charge of the Bradbourne Gardens since 1949, left in October. She was succeeded by Miss D. Rhodes who, like Miss Couch, was formerly one of our Plantation Assistants.

The staff of the Bureau has been augmented by the appointment of Miss E. M. J. Napier in April, otherwise there were no changes in the scientific staff. The patience with which members of the Administrative and Bureau Staff have withstood the changes at Bradbourne that are recorded elsewhere in this Report has been much appreciated.

Finally again we must thank those who assist the Director on the various Standing Committees—Library, Workshops, Greenhouses, and so on. Only the Canteen Advisory Committee is re-elected annually and this year Mr. C. H. W. Slater has become Chairman in succession to Mr. G. K. Argles. The flourishing state of the Canteen has already been remarked upon.

Organized Visits.

Following on the successful visits, in 1953, of members of the Research Staff to Long Ashton and to the Grassland Research Station at Hurley, this year we visited Rothamsted. The party, which numbered nearly 60 and travelled in two buses, was welcomed on arrival by Sir William Ogg, the Director. The party was then taken to the lawn in front of the beautiful Manor House where Sir William gave an outline of the history and work of the Station. The morning was spent in a tour of the field plots and after lunch the party split into smaller groups for tours of the laboratories. Naturally it was impossible to see the work of all sections in detail but a very good impression was gained of the scope of the work and the facilities available, and many personal contacts were established.

As part of the policy to help the staff to learn more about practical fruitgrowing and to understand some of the problems faced by growers on their holdings, three farm visits were arranged during the summer, the party numbering about 30 on each occasion and travelling by coach.

On 6th July, the cherry orchards in the Faversham district were visited under the guidance of Mr. Stuart Dixon. The tour began at Luddenham Court, where Mr. S. Stevens told how he produced cherries in one of the finest orchards in the country. The party then stopped in succession at Teynham Peat, to see one of Mr. Dixon's orchards close to the Luddenham Marshes, where a short distance away the serious effects of the 1953 sea floods were visible, at Hockley Hole Farm, by kind permission of Lord Harris, to see tree performance at a considerably higher altitude, and at Rodmersham, where Mr. C. Gascoyne showed his well-managed orchards on deep brick earth.

The morning of 12th July was spent with Mr. Giles Toker on his farm at Danbury. The carefully laid out orchards, beautifully managed grass swards and deep mulches were most impressive. A small experimental orchard of bush peaches provided another point of special interest. The afternoon was spent at the Essex Institute of Agriculture, where Mr. A. G. Healey and Mr. M. D. Austin acted as guides. Points of interest

included rootstock differences, nutritional deficiencies, a soil management trial, Fruit Tree Red Spider Mite trials, and fruit plots for teaching purposes. The visit concluded with a rapid tour of the laboratories and lecture theatres.

The visit to the farms of W. Seabrook and Sons, on 8th September, proved to be a very full day. The party was personally conducted by Mr. W. P. Seabrook and his sons, starting from the Boreham Farm, where long established orchards mainly of Cox and Worcester were seen. On Chantry Farm, the famous nursery grounds were seen with some of the special machinery developed for managing it economically. The tour finished at the packing house at Leighs Hall Farm after heavy rain, which had slightly upset the itinerary.

In addition to these visits a small party visited the farm of Mr. W. H. S. Williams at Biddenden, where some of the problems facing the smaller grower who aims at high quality were discussed.

We wish to thank all these growers for their hospitable reception of the parties and for their co-operation in making the visits so useful and pleasant.

Social and Athletic Activities.

Last year we reported that the latest example of the Association's concern for amenities for the staff—the Sports Pavilion—had been in use for the first time. In the year that has elapsed since, much progress towards completion and equipment has been achieved; and, on the occasion of the annual cricket match, Staff *v.* Members, Lord Cornwallis paid us a special visit to declare the Pavilion formally open. The afternoon was graced by fine weather, but, alas, both the weather and the performance of the Staff team deteriorated after tea and the match ended with a decisive win for the Members.

Once again the Association has made a generous donation towards staff amenities during the year, which is much appreciated by all.

In December, 1953, for the Christmas Party at Bradbourne, Miss Seymour produced a pantomime, which was the source of much hilarity; this was followed as usual by dancing. The Dance Club, which was responsible for the latter part of the evening, also organized its annual ball at Bradbourne in January.

Apart from the Members' Cricket Match and the Director's Strawberry Parties, the main social event of the summer was the Children's Party on 24th July. For this, we were exceptionally lucky to have one of the few fine afternoons of a miserable summer. How the Social Secretary counts the guests, the writer of these notes has never been able to understand but, this year, he reports that there were 140; whether the increase of 10 on the previous year is significant or not is more than we can say. This year trick cycles added considerably to the merriment of our small guests.

Despite the continuous poor weather the athletic clubs report good seasons. The Cricket Club has increased its membership; the Tennis Club, with 25 members, reports successful Club nights, a singles tournament and 6 matches of which they won 3; even the Boat Club managed to repaint its boat. We now have a Netball Club with 19 lady members; the new club has had numerous practice games, on the grass in summer and on the tennis court in winter, and has played 6 matches, winning 4 of them.

During the winter months both the Hockey and Table Tennis Clubs flourished. The former won 8 out of 10 mixed matches, though their ladies' team was not quite so successful. The latter had 2 club nights a week during the winter, won 7 out of 15 matches, and held a knock-out tournament. Presumably Folk Dancing must also be

included as an athletic pursuit, 3 square dances providing the 30 who attended with plenty of exercise.

The Music Club continues to arrange gramophone concerts, which are much appreciated, and arranged two visits to the Ballet for members and friends. The Play Reading Society is also still very popular, 14 plays having been read ; the annual party, held in March, is now an established event. The Chess Club still exists, but we hope to hear that it is more active next year.

Lastly, we are pleased to note that we have more photographers, who make good use of the facilities available to members of the Club in the Studio.

We are glad to note reports of increased membership by several Clubs and hope this means a greater appreciation by some of the junior members of staff of the advantages of joining with their colleagues in play as well as in work.

POSTGRADUATE STUDENTS.

Now that the laboratory extensions are completed we should have more room to accommodate postgraduate students who wish to study for higher degrees with London University. Unfortunately, we must report that the number of applicants with sufficient qualifications is now very small. This applies not only to students from abroad, indeed the only two postgraduates at present registered with the University, who are not members of staff, come from Canada and New Zealand, but particularly to graduates of our own Universities. We suspect that financial causes are mainly responsible and for this reason, would point out to grant-aiding bodies that a good place to learn to do research is a Research Station. For ourselves, a closer liaison with the University may perhaps make the three years' study more attractive to prospective students.

Candidates for Higher Degrees and other Long-term Students.

Of the seventeen postgraduates who were studying for higher degrees during the year, two, who were also members of staff, were awarded degrees.

Mrs. J. R. Llewelyn (*née* Groves) received a Ph.D degree in March for a thesis entitled " A Study of some Tortricodea on Fruit Trees with special reference to the Codling Moth, *Cydia (Ernarmonia) pomonella* (L.) " ; Miss B. G. Mosse also received a Ph.D. degree in April for a thesis entitled " Studies on the endotrophic mycorrhiza of some fruit plants ". We congratulate them both.

In February, Mr. R. G. Lockard of Canada completed his course of study in the Physiology Section ; and, in November, 1954, Mr. T. H. Williams, a Colonial Agricultural Research scholar, finished a year's work in the Plant Pathology Section, studying particularly virus diseases, and left to take up an appointment in North Borneo, where he is to study the Bunchy Top disease of Abacá.

Earlier in the year we welcomed Mr. Shambhu Man Singh who came from Nepal for a two years' course in research methods with the Pomology Section.

Short-term Students.

In the Autumn, 1953, at the request of the Director of Long Ashton, we were glad to find a place for 3 months in the Statistics Section for Mr. G. M. Clarke, who had recently been appointed Statistician at that Research Station, so that he could familiarize himself with the application of statistical techniques to fruit experiments. He visited us again for a short period in the Spring. Mons. D. Gros, Assistant Statistician at the Agronomie Department, Institute de Recherches pour les Huiles et Oleagineux, Paris, also spent a month in the Section in August, 1954. Mr. Dov Barak, of the Pomological Section of

the Ministry of Agriculture, Israel, spent four weeks in our Pomology Section in August, and Mr. S. Paunovic of the Fruitgrowing Institute, Cacak, Yugoslavia, came for a month's general study in September, returning for a longer period later in the year.

TEMPORARY RECORDERS.

We still get many applications for vacation work from University students under this scheme. The main object is to give potential research workers experience of experimental work in the field and the fact that, in recent months, two new members of staff have had experience here first as temporary recorders shows how valuable that experience may be.

This year we filled fifteen vacancies in the Pomology, Physiology, Entomology and Plant Pathology Sections from forty-three applications, those accepted coming from Oxford, Cambridge, London, Reading, Durham, Exeter and Sutton Bonington.

In the summer the second contingent of three members of the National Agricultural Advisory Service to undergo a year's training at East Malling prior to appointment as recorders at Experimental Horticulture Stations, were posted to Luddington, Efford and Stockbridge House. At each of these Stations there are now two trained fruit recorders, who should help materially to make the necessary observations on the wide range of fruit experiments that have been planted.

PLANTATION ASSISTANTS.

Plantation Assistants are now a firmly established part of the Farm Staff and many research workers have cause to be grateful to succeeding teams—most of them stay two years—for the painstaking work they put in on field experiments of all kinds, intensive and extensive.

The fact that their services are appreciated has been marked by the decision of the Court of the Worshipful Company of Fruiterers to award annually a medal and cash prize, open to those in their second year, to the Plantation Assistant who has shown the most progress and application to his or her work during the previous twelve months.

The first award, in respect of the year ending 30th September, 1954, was made to Mr. Peter Harrison. We congratulate Mr. Harrison, who has now left us to manage a fruit farm in Norfolk.

During the past year we have had four girls and eight men, whose work proceeded on the usual lines. Mr. A. E. H. Rutter now organizes the winter lectures given by members of staff, to which Mr. B. S. Furneaux contributed a talk on the soil survey of the Research Station. Visits were paid to farms, fruit shows and Institutes, particularly Bayfordbury.

Two of those who completed their course this year are still with us, one an Assistant (Scientific) in the Plant Pathology Section and the other in the Bradbourne Gardens. Others have found their places at Studley and the Experimental Horticulture Station at Stockbridge House, and in commercial horticulture. We congratulate another ex-Assistant, Mr. G. Norton, who is now in the National Agricultural Advisory Service, on passing his National Diploma in Horticulture final examination.

STAFF DISCUSSIONS.

The usual Staff Discussions were arranged during the winter, with six full length meetings and one short additional one. The first was a talk by Mr. B. S. Furneaux on the soil types of the Research Station, and this was supplemented by a short discussion which dealt with differences in fertility brought about by past use of the land.

Other subjects discussed were eelworms, entomological problems in Canada, some aspects of host-parasite relations, the action of copper on apple trees, some recently excavated root systems, quality in fruit, and the regeneration of rootstocks.

RESEARCH TOURS.

For the first time since the War, it was made possible, with the assistance of grants from the Agricultural Research Council, for two members of staff to visit Canada. At the end of May, Dr. A. H. M. Kirby, Head of the Plant Protective Chemistry Section, and Dr. G. H. L. Dicker of the Entomology Section, left for a three months' tour of Canadian research centres to study recent developments in the biological and chemical control of orchard and small fruit pests with special reference to the integration of methods. With this object they visited Science Service and Experimental Farm establishments from Eastern to Western Canada, a tour which made it possible for them to observe also other aspects of horticultural research in progress. Some of their observations are described in the Research Report.

Following the International Botanical Congress in Paris, Dr. A. B. Beakbane visited the Loire Valley to collect budwood of plums, cherries and pears likely to be free from virus or of interest for studies of incompatibility. Dr. W. S. Rogers also made a short visit to growers of perpetual-fruited strawberries near Orleans.

At home, members of staff in all Sections have visited other Research Institutes and Experimental Horticulture Stations in the course of their work. In July a special party consisting of the Director, Dr. R. V. Harris, Dr. M. H. Moore and Mr. D. S. Kirkham paid a visit to the Wisbech district to study local problems in the control of Apple Scab and Mildew, the last named making a second visit later to collect samples of local strains of *Venturia*.

COLLABORATION.

Close collaboration between research workers at the various Institutes carrying out horticultural research is now so much a feature of our lives that it is difficult to pick out particular instances for mention in this Report each year. Indeed, there is hardly a Station in this country, where research in horticulture is undertaken, with which there is not an example of collaborative work in progress. Often such projects arise spontaneously through contact between research workers ; others are initiated as an outcome of Agricultural Research Council Conferences.

From the point of view of direct interest to growers, perhaps the joint contribution of the Research Stations to the work of the N.A.A.S. Experimental Horticulture Stations is an outstanding example. We are, of course, particularly interested in experiments initiated by the Fruit Working Party, whose initial planting programme for five Stations was completed in the Autumn, 1954. Altogether, something like 80 fruit experiments have been planned and planted covering such subjects as varieties, nutrition, rootstocks and the control of pests and diseases. Many of these trials are sponsored by one or other of the Research Stations or by the National Fruit Trials ; often there is collaboration with the National Agricultural Advisory Service.

Outside the regular Experimental Stations, there are numerous examples of collaboration with the N.A.A.S. in trials on growers' farms, one of which is the placing of 14 further sets of Cox's Orange Pippin and Worcester Pearmain apples on various sites throughout the country, to demonstrate to growers the behaviour of trees worked on the new Malling-Merton rootstocks as compared with those now standard in commerce.

Another instance is the initiation this year of two trials on farms in the Eastern and South Eastern Provinces for the study of concentrate spraying of apples. In the latter the National Institute of Agricultural Engineering is also taking part.

One particularly valuable means of collaboration between Institutes is the supply of plant material and fruit for experimental use ; in some instances the investigation is a joint one, in others the arrangement is one of mutual exchange, but we are often glad to supply pedigree material, that cannot be obtained elsewhere, from our nurseries or fruit plantations knowing that the return will come only in the form of new knowledge for the benefit of fruitgrowers the world over. Thus, during this year we have distributed to Research Stations all over the world no less than 37 consignments of Malling-Merton rootstocks for trial under their conditions.

With regard to fruits, the Ditton Laboratory are, of course, our chief collaborators. With the staff there, we have primarily the joint experimental work on the influence of orchard factors on storage, with particular reference to *Gloeosporium* rots. Apart from this enterprise, much fruit is supplied to the Ditton Laboratory as in previous years. The Chipping Campden Research Association have collaborated with us this year in the assessment for canning and quick-freezing qualities of certain of the new seedling raspberries now under trial. Another new commitment was the supply of a wide variety of fruits, grown under different conditions, throughout the season to the Kent County Analyst.

If we do not mention individually the numerous examples of collaboration with research workers at other Institutes, some of which have been in progress for many years, it is not because we do not appreciate their value ; one or two new instances may, however, be cited. Thus, the British North Greenland Expedition collected for us some arctic plants, reputed to blossom and set seed under frosty conditions, for use in fundamental studies of frost resistance. The Statistics Section have made contact with the Forestry Commission's Research Station at Alice Holt, near Farnham, Surrey. Two unsprayed orchards at Ulcombe, Kent, placed at the disposal of the Entomology Section by Mrs. M. Waller for the past two seasons, have been valuable for ecological studies.

As usual we end this Section with our thanks to all our collaborators, whether we have been able to mention them this year or not.

OUTSIDE TRIALS AND DEMONSTRATIONS.

Like the various enterprises alluded to in the previous paragraph, many trials on growers' plantations continue over long periods, from time to time coming to notice especially when a report is written or some particular event recorded. Thus, some 20 years ago, five small plots of apples on known rootstocks were established on different farms throughout Kent in connection with the Fruit Soil Survey, in the planting of which close collaboration was recorded " between the Pomology Section, Mr. B. S. Furneaux of Wye College and the County Horticultural Staff ". Since that time, despite many changes, the trees have been maintained by the owners of the farms concerned, annually pruned and recorded by our own staff and members of the County Advisory Staff, and many valuable observations made. In recent years, some of these trees have been carefully excavated, as a result of which much new knowledge is being acquired of the relative performance of trees on similar rootstocks under different soil conditions. Our warm thanks should go to those growers who have made a long-term project like this possible.

A more recent investigation is that now in progress, in collaboration with Ditton Laboratory, on fruit storage with special reference to *Gloeosporium* rots on Cox's Orange

Pippin in which many growers are helping us. Spraying trials for control of *Gloeosporium* have been done on seven farms, and we have received no less than 234 samples of Cox's Orange Pippin grown under all kinds of conditions. These will be stored at 37° F. on the Station with a view to acquiring information on the influence of orchard factors on storage life.

Most of the other trials on growers' farms have been in progress for several years ; we think that the results will give satisfaction to all those who put valuable facilities at our disposal.

OUTSIDE COMMITTEES.

There has been no reduction in the demand for the service of senior members of staff on research, advisory and technical committees. Often such service arises directly from the work or is the means of promoting valuable collaboration between research workers or with advisory officers. Sometimes, however, members of staff are asked to serve as experts on committees at least part of whose functions are quite unconnected with the work at this Station. We have been reluctantly compelled to consider such invitations in the light of the effect on our work here, most senior members of staff being already fully occupied.

Dr. W. S. Rogers is now serving on the Council of the Association of Applied Biologists. Dr. R. V. Harris was appointed to the Council of the Institute of Biology, is a member of the Propagation Committee of the Hops Marketing Board and is technical adviser to the Committee of the Association of Growers of New Varieties of Hops.

SCIENTIFIC SOCIETIES AND CONFERENCES.

Four members of the Pomology Section and one of the Plant Pathology Section attended the VIII International Botanical Congress in Paris and presented papers on physiological anatomy in relation to tree growth, by Dr. A. Beryl Beakbane, frost damage to plant tissues including a study by cinemicrography, by Dr. W. S. Rogers and Dr. Irena Modlibowska, mycorrhiza of fruit plants (two papers), by Dr. Barbara Mosse and fruit tree virus diseases, by Dr. A. F. Posnette.

Dr. A. M. Massee gave a lecture to the 6th Commonwealth Entomological Conference, in London, on the effect of the use of chemicals on the balance of animal populations. Dr. M. H. Moore read a paper on low volume spraying at the Commonwealth Mycological Conference in London.

Dr. F. R. Tubbs and Dr. D. W. P. Greenham attended the British Weed Control Conference at Margate, where Dr. Tubbs delivered a paper on the scope for the use of herbicides in fruit culture. Dr. P. W. Talboys attended the International Hop Colloquium at the Brewing Industries' Research Foundation, at Nutfield, Surrey.

Dr. W. S. Rogers and Dr. Irena Modlibowska read papers on frost damage to fruit to the Glaciological Society at Cambridge and Dr. Barbara Mosse gave a paper on mycorrhiza to the Society of Experimental Biology, at Reading. Papers were read to the British Mycological Society at Cambridge entitled "Bacteriosis of stone fruits—epiphytic leaf surface populations" by Dr. J. E. Crosse and "Chemical constituents of the host in relation to infection by *Venturia* spp." by Mr. D. S. Kirkham. Mr. A. C. Mason demonstrated a microchemical method for estimating calcium to the Society for Analytical Chemistry.

Papers were contributed to the A.R.C. Conference on strawberry diseases at Manchester University on "The effect of yellows on Auchincruive Climax" by Dr.

A. F. Posnette and Mr. R. Cropley and on " The heat treatment of strawberry plants " by Dr. Posnette and Miss E. E. C. Ellenberger. The conference was attended by Dr. R. V. Harris and the authors of these papers with the exception of Dr. Posnette, who was at the Botanical conference.

Members of staff attended other meetings of learned societies and conferences of research workers and advisers, and contributed to the discussions.

INFORMATION SERVICES

There was little change in the number of enquiries for research information. Of the 1,827 letters, some 327 were answered personally by members of the research sections ; the rest were replied to by the Scientific Liaison Section with specialized assistance as necessary. More than half of the 54 visits were made by the entomologists, and 9 of the others were concerned with suspected winter frost injury in the West Midland Province.

EXHIBITS.

At the Chelsea Flower Show we demonstrated research on virus diseases of top fruit and showed the importance of these diseases in the propagation of fruit trees. Examples were given of diseases carried without symptoms by rootstock and scion respectively, and the methods of testing for these by indexing on special plants were displayed.

An exhibit was taken to the Horticultural Show at Folkestone this year, instead of to similar shows nearer the Research Station, at which we have staged frequently in recent years. The subject was the production of fruit for consumption all the year round by the use of suitable varieties and cultural methods based on the results of research.

Stages in the breeding and selection of improved rootstocks were exhibited at the conversazione at the Jubilee Meeting of the Association of Applied Biologists. This subject was chosen because it provided an opportunity of displaying something of the work of a number of different research sections and at the same time of drawing the separate exhibits together, by a common theme.

An exhibit on Plant Hormones was staged in the Botany School at the Imperial College, London, on the occasion of Commemoration Day.

The centre piece of the N.A.A.S. exhibit on " Soil water, its importance and control " at the Royal Show at Windsor was provided by a 23-year-old tree of Cox's Orange Pippin on M.II with its complete root-system, which was specially excavated on the Research Station for this purpose.

VISITORS.

Our records show that we had just over 2,000 visitors during the year, of whom nearly 500 came from overseas.

Among the many distinguished people who visited us, we were particularly pleased to welcome the Lord President of the Council and the Minister of Agriculture. Lord Salisbury was accompanied by Lady Salisbury and by Sir William Slater, Secretary of the Agricultural Research Council ; while with the Right Hon. D. Heathcote Amory came Mr. A. R. Manktelow of the Ministry of Agriculture. From abroad, among many others, we welcomed Dr. G. de Bakker and Mr. van Hennick, new Director of Zeelands Proefstation at Goes, Mr. A. D. Pickett, of the Entomology Laboratory, Kentville, Nova Scotia, Dr. Maurice Welsh, of the Summerland Plant Pathology Laboratory,

British Columbia, Canada, and Professor Olavi Meurman, Director of the State Horticultural Research Station, Pütkiö, Finland.

The parties of visitors included the 5th Commonwealth Mycological Conference, the Association of Applied Biologists (visiting as part of the Jubilee Meeting), the Grassland Research Station, the London Branch of the Institute of Biology, Scottish Fruit Trials Officers, Waveney Apple Growers Ltd., Chelmsford and Maldon Fruit Discussion Group, Sandwich and Preston Growers, and Northern Ireland Horticultural Development Association.

From overseas, we had a party from France interested in the organization of research, led by Monsieur A. Reifenberg, fruitgrowers from Normandy led by Monsieur R. Bonnicel, parties of students from Macerata in Italy and from Vilvorde in Belgium, and several groups of trainees under the Colombo Plan.

The horticultural staff of the N.A.A.S. and the Local Education Authorities made good use of the various opportunities provided for visiting the Station. The dress rehearsals that preceded the four Members' Days were mostly well attended, the total attendance for these days amounting to 141. The usual refresher courses on Nettlehead of hops and on rootstocks, for those concerned with certification inspections, were held and the soil chemists' conference, which met at Wye, included a day at the Research Station in their programme. For the annual two-day visit, the staffs of the Local Education Authorities were allowed to join with the N.A.A.S. and the party numbered 70, but the size of the party made it very difficult to achieve the personal contacts between advisory officers and research workers that have been such a valuable part of these visits. In all some 266 horticultural officers visited us in these organized parties.

Attendances at Members' Days are not included in the above figures and amounted to about 700.

LECTURES AND DEMONSTRATIONS.

Forty-three lectures have been given to growers and students in various parts of the country, including one in Dublin. A course of six lectures on entomology was given to the horticultural students at the Essex Institute of Agriculture. Demonstrations of pruning methods were made jointly with the N.A.A.S. at two centres in Kent and one in Suffolk. Dr. Moore contributed a broadcast talk on the B.B.C Home Service in November, 1953, on "Concentrate spraying in fruit plantations".

Members of staff judged fruit at the Cherry and Soft Fruit Show, the Marden Fruit Show, the East Kent Fruit Show, the Annual Ploughing Match of the Gravesend and Rochester Agricultural Association, the Royal Dublin Society Autumn Fruit Show, and the Horticultural Shows at Platt and West Malling. In addition, one examined in the N.D.H. finals in Section III, Fruit Crop Husbandry.

DISTRIBUTION OF EXPERIMENTAL MATERIAL.

The details of the 1953-54 season in so far as they affected the Station's nurseries are set out in the Farm Report. In this report we are more concerned with policy and with the material that has been offered to Members.

Last year we described some of the work of the nurseries in providing research material and pointed out that the main items in future Distribution Lists would be new varieties or virus-free re-selections of established ones.

Members should realize what an immense task is now being undertaken by our nursery staff, working closely with the research staff, in the propagation of reselected virus-tested clones of rootstocks and scion varieties. Mother trees of some of the latter

have already been offered to Members—four cherry varieties in 1952-53 and a further three, Merton Bounty, Merton Glory and Geante de Hedelfingen, this year. We are only sorry that more Members have not yet realized their value. Virus-free clones of the standard varieties of rootstocks are constantly being sought and, as they are found, new stoolbeds established in which to multiply them. Similarly, the more important apple scion varieties are being tested, first for rubbery wood, then for chat fruit, as well as other less important virus diseases and, as soon as they are found to be clean, mother trees will be worked on virus-free rootstocks for distribution to Members.,

In the August Distribution List the five new Malling-Merton apple rootstocks, four of which are highly resistant to Woolly Aphid, were offered exclusively to Members, for the third year in succession, under an agreement not to part with them for one year. The response was more encouraging than the previous season and this year there will be few left unsold. There has also been a heavy demand for our now rather limited surplus of some of the older rootstocks, particularly M.VII, M.II, and Crab C, whereas not all the Fr2/1 cherry rootstocks available have been taken up. This was the reverse of what happened in 1952-53, which shows how difficult it is to forecast our Members' needs, even a year ahead.

Also in the Distribution List this year there have been a number of two-year-old Lord Lambourne that have been tested and found free of rubbery wood virus, though they could not be sent out as mother trees, as the results of testing for chat fruit are yet to come. None the less, most of them have been taken up. Other fruit trees offered to Members were in little demand.

STATION'S PUBLICATIONS.

Publications during the year numbered 57 with 36 scientific papers and 21 practical articles for fruitgrowers. These are all listed in Part II of the Research Report.

Journal of Horticultural Science.

As this report is late in going to the press this year, we feel we should allude to the sad news of the sudden death on 15th February, 1955, of Dr. W. M. Ware, Assistant Editor since 1948. Dr. Ware edited six volumes, during which time he has contributed very greatly to the present very high standard of the Journal. Many authors have cause to thank him for his careful preparation of their papers for the press and meticulous proof correcting.

During 1954, regular quarterly publication was maintained and Volume XXIX was published within the year without financial loss, even without the aid of grants from any outside source. The volume contained 29 papers, of which 9 were from East Malling and 6 from Long Ashton.

The Editors are concerned at the falling off in the number of papers submitted for publication during the last three years. This, of course, is an advantage from some points of view, as the average length of time between receipt and publication has now fallen to nine months. However, from an editorial standpoint, it is very difficult to maintain regular publication with no reserve.

LIBRARY COMMITTEE.

After a year of adventure the library is now settling down to normality.

Towards the close of 1953 existing shelves were full nor was there room for satisfactory additional shelving.

The removal of part of the Scientific Liaison Section from Bradbourne to the laboratories eased pressure slightly and made it possible to allocate most of the old common room at Bradbourne to the library for use as a store and office. During 1954 this was put in good repair and fitted with shelving. It is now in use.

In the course of alterations to this room, which lies immediately under the old library, the ceiling and floor above were found to be unsafe. This floor, devised for the carriage of hundredweights rather than tons, had begun to sag under the weight of literature. In view of this it was decided to move the library from its oversnug quarters aloft to more capacious quarters at the north west end of the ground floor on either side of the Great Hall.

A certain amount of disruption in library service occurred and was indeed inevitable, since the library staff had for a time much to contend with, apart from the difficulty of locating literature necessarily packed in endless rows of fruit boxes. Nevertheless, the volume of loans and items circulated was up to normal for the year, and the ceaseless compilation of *Horticultural Abstracts* by the Bureau was not noticeably impeded. Grateful acknowledgment is made of the hard work, interest and co-operation of everyone concerned with the move and with making the new library habitable, including those who thought out ways and means and those who were beasts of burden.

The new library, being now split into three or four sections, is not quite so well designed for quick service as it was before, but it has the great advantage of being on the ground floor. The room which was previously that of the secretary and now contains the books and bound journals has been planned as the quieter room, and here study uninterrupted by the typewriter and other noises of library routine work is possible. The new fluorescent lighting is vastly more efficient than the old, but in the daytime the library has not the window efficiency of the old. Seating accommodation for readers is not so good as in the old library, but additional accommodation is now provided for them by the new common room.

Perfection cannot be attained at one stride and there is still room for improvement as regards such details as floor covering, heating, etc. Additional shelving now fills the two main rooms and the store room and gives adequate spacing for journals for some years to come. Taken all in all the library can now face the future with far more equanimity than a year ago.

For brevity's sake the usual library statistics are omitted from this report. It only remains to thank all those who have given books, journals and other literature during the year.



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